

ABSTRACT

The present invention provides a current injection-type magnetic domain wall-motion device which requires no external magnetic field for reversing the magnetization direction of a ferromagnetic body and which has low power consumption. The current injection-type magnetic domain wall-motion device includes a microjunction structure including two magnetic bodies (a first magnetic body 1 and a second magnetic body 2) having magnetization directions antiparallel to each other and a third magnetic body 3 sandwiched therebetween. The magnetization direction of the device is controlled in such a manner that a pulse current (a current density of  $10^4$ - $10^7$  A/cm $^2$ ) is applied across junction interfaces present in the microjunction structure such that a magnetic domain wall is moved by the interaction between the magnetic domain wall and the current in the same direction as that of the current or in the direction opposite to that of the current.